

WHAT IS CLAIMED IS:

1. A lead-free solder comprising an alloy composition composed mainly of tin, said alloy composition containing 0.002 to 0.015% by mass of phosphorus.

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23+ Sub 1
2. The lead-free solder according to claim 1, wherein said alloy composition comprises 2.0 to 5.0% by mass of silver, 0.01 to 2.0% by mass of copper, and 0.002 to 0.015% by mass of phosphorus with the balance consisting of tin.

3. The lead-free solder according to claim 1, wherein said alloy composition comprises 0.01 to 2.0% by mass of copper and 0.002 to 0.015% by mass of phosphorus with the balance consisting of tin.

Sub 2
4. A connection lead comprising: a copper strip or other strip conductor; and a plating provided on at least one side of the strip constructor, said plating being formed of a lead-free solder composed mainly of tin,

5. said plating containing 0.002 to 0.015% by mass of phosphorus and having a shape such that the plating in the widthwise direction of the strip conductor has a bulge as viewed in section with the apex being located at a proper position in the widthwise direction of the strip conductor.

5. The connection lead according to claim 4, wherein the bulge is in the form of an arc, a triangle, or stairs of which the apex is located at a proper position in the widthwise direction of the strip conductor.

6. The connection lead according to claim 4, wherein a plurality of apexes of said type are provided in the widthwise

3 direction of the strip conductor.

1 7. The connection lead according to claim 4, wherein the
2 strip conductor on its both sides are exposed or are covered
3 with the lead-free solder constituting the plating.

1 *Sub 3* 8. An electrical component structure comprising a
2 connection element formed of a lead-free solder composed mainly
3 of tin,

4 said connection element containing 0.002 to 0.015% by
5 mass of phosphorus.

1 9. The electrical component structure according to claim
2 8, which is a solar battery that, in a structure of a
3 connection between a power generation wafer in its
4 predetermined region and a connection lead, has a plating as
5 the connection element provided on the surface of the
6 connection lead and has been sealed with ethylene-vinyl acetate.

1 10. The electrical component structure according to claim
2 8, which is a printed board that has in its predetermined sites
3 soldered portions, formed by flow or reflow, as the connection
4 element.

1 11. The electrical component structure according to claim
2 8, which is a ball grid array-type printed board that has, as
3 the connection element, a plurality of solder balls,
4 functioning as a terminal portion, arranged in a predetermined
5 site.

1 12. The electrical component structure according to claim
2 8, which is a single wire, a twisted wire, or a strand for a
3 served shield, for electric wires, has on its surface a plating
4 as the connection element.



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